

ABSTRACT OF THE DISCLOSURE

In order to vaporize an organic monomer at a high temperature and a high saturated vapor pressure in good efficiency and to grow an organic polymer film at a high rate in high vacuum by a plasma polymerization reaction of the resulting organic monomer gas, a liquid divinylsiloxanebisbenzocyclobutene (DVS-BCB) monomer is mixed with a carrier gas, and the mixture is then sprayed on a vaporization vacuum chamber held at a high temperature to form an aerosol made of liquid fine particles of the organic monomer, and a BCB monomer (organic monomer) is instantaneously vaporized via the aerosol to generate a BCB monomer gas (organic monomer gas). Consequently, the aerosol having a large specific surface area has a large vaporization area, and vaporization occurs by heating at a high temperature before a polymerization reaction occurs. Thus, 0.1 g/min or more of the BCB monomer gas can be formed at 200°C and a high saturated vapor pressure, and a plasma polymerization BCB film can be formed at a high rate which is at least 5 times higher than in the ordinary film formation.

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